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(54) Title: CANCER IMMUNOTHERAPY WITH A VIRAL ANTIGEN-DEFINED, IMMUNOMODULATOR-SECRETING CELL VACCINE

(57) Abstract: A human cell line, which lacks major histocompatibility class I (MHC-I) antigens and major histocompatibility class II (MHC-II) antigens and which has been modified to comprise and express (i) a nucleotide sequence encoding an immunomodulator and (ii) a nucleotide sequence encoding a viral antigen, and a method of inducing or stimulating an immune response in a human to a viral-associated disease or cancer comprising administering to the human (i) the aforementioned human cell line in an amount sufficient to induce or stimulate an immune response to the viral-associated disease or cancer, (ii) a human cell line, which lacks MHC-I and MHC-II antigens and which has been modified to comprise and express a nucleotide sequence encoding an immunomodulator, and a human cell line, which lacks MHC-I and MHC-II antigens and which has been modified to comprise and express a nucleotide sequence encoding an antigen of EBV, simultaneously or sequentially in either order, by the same or different routes, in amounts sufficient to induce or stimulate an immune response to the viral-associated disease or cancer, or (iii) an immunomodulator and a human cell line, which lacks MHC-I and MHC-II antigens and which has been modified to comprise and express a nucleotide sequence encoding an antigen of EBV, simultaneously or sequentially in either order, by the same or different routes, in amounts sufficient to induce or stimulate an immune response to the viral-associated disease or cancer.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/29684

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12N 5/10; A61K 45/00, 39/245; A01N 63/00

US CL : 435/366; 424/93.21, 230.1, 277.1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 435/366; 424/93.21, 230.1, 277.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99/38954 A1 (LEVITSKY et al) 5 August 1999 (05.08.99)	1-57
A	US 5744353 A (HERMAN et al) 28 April 1998 (28.04.1998), see column 15 lines 17-22.	1-57
A	KHANNA et al. Immune Regulation in Epstein-Barr Virus-Associated Diseases. Microbiological Reviews. 1995, Vol. 59, No. 3, pages 387-405.	1-57
A	ASADA et al. Significant antitumor effects obtained by autologous tumor cell vaccine engineered to secrete interleukin (IL)-12 and IL-18 by means of the EBV/lipoplex. Molecular therapy. May 2002, Vol. 5, No. 5, pt. 1, pages 609-616.	1-57

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents.

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Continuation of B. FIELDS SEARCHED Item 3:

EAST USPat, PGPub, EPO, JPO, Derwent, Meline. Search terms: K562, CELL, EBV, CYTOKINE, CHEMOKINE, ADJUVANT, INTERFERON, INTERLEUKIN, TNF, ERYTHROPOIETIN, FLT, CSF, MODIF?, GENE, GENES, GENETI?, VIRUS, VIRAL, HLA(3N)NEGATIVE, IMMUNOMODULAT\$, IF, IFN, IL, EPO, LEVITSKY, BORRELLO, MHC, HLA, NEGATIVE, ABSENT, VACCINE, CANCER, TUMOR, TUMOUR